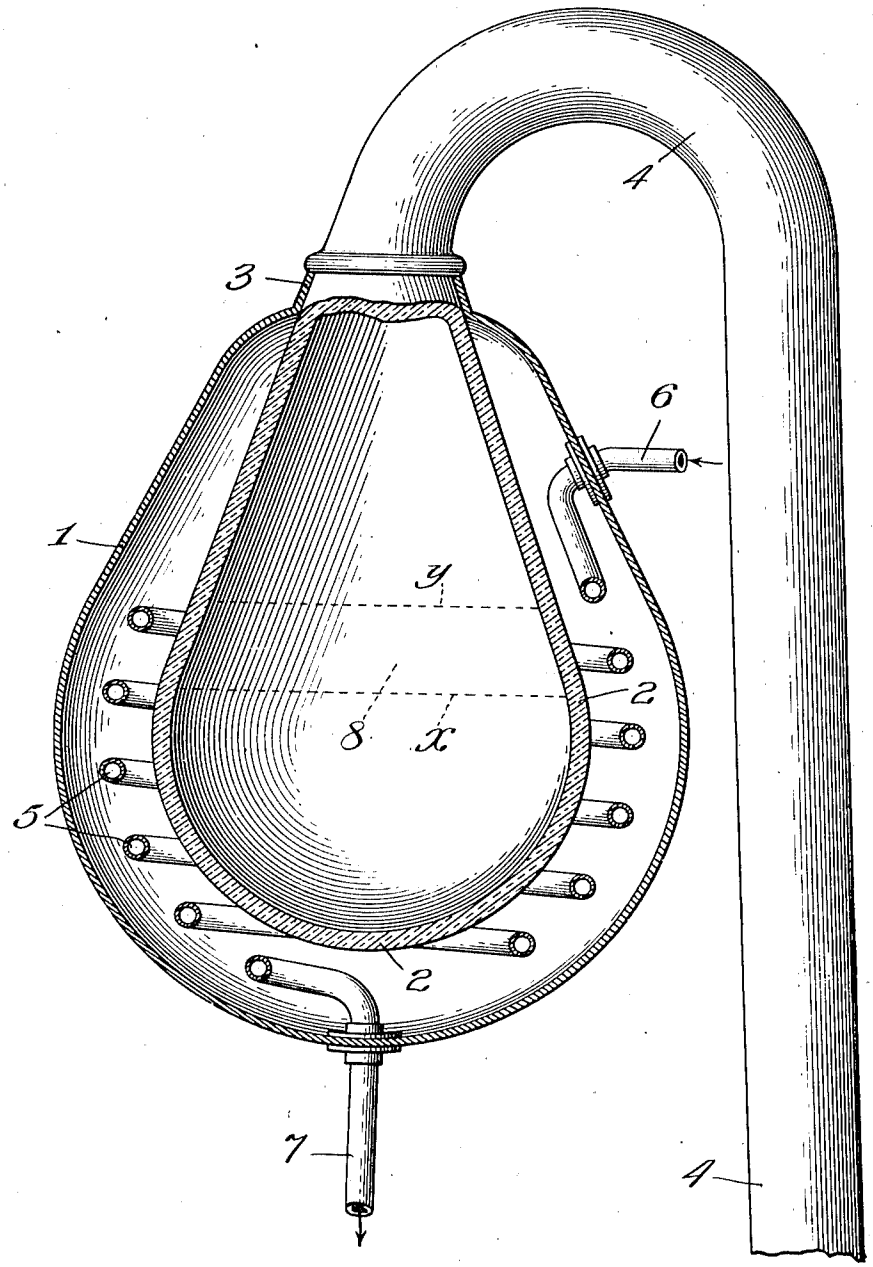
V. C. BEST.

ART OF PURIFYING CHLOROFORM.

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1,066,877.

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UNITED STATES PATENT OFFICE.

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ART OF PURIFYING CHLOROFORM.

1,066,877. Specification of Letters Patent. Patented July 8, 1913.

Application filed November 4, 1912. Serial No. 729,373.

To all whom it may concern:

Be it known that I, VICTOR C. BEST, a subject of the King of Great Britain, residing at Oak Park, in the county of Cook and State of Illinois, have invented a new and useful Improvement in the Art of Purifying Chloroform, of which the following is a specification.

Chloroform, as commonly produced by the methods heretofore practised, contains a certain percentage of free chlorin and volatile oils, the presence of which is objectionable, especially when the chloroform is inhaled, as for anesthetizing purposes, as they are injurious to the human body, often producing deadly effects, the free volatile oils in the chloroform acting on the respiratory and cardiac centers in the body and causing a disorganization of the physiological functions. It has been found that by removing the free chlorin and the volatile oils, the chloroform, thus "purified," is purged of its deadly effects without affecting it as an anesthetizing medium.

My object is to provide a process whereby the free chlorin and volatile oils may be effectually removed from chloroform with the above-stated advantageous results, my improved process, generally stated, consisting in passing the chloroform in vaporized condition through a fluid capable of chemically combining with free chlorin in the chloroform vapor.

In practising my new process I may use any desirable apparatus, the accompanying drawing illustrating, by a view in sectional elevation, a form of apparatus which may be used to advantage.

The apparatus illustrated comprises a flask 1, a receptacle 2 located in the flask and spaced from the wall thereof; said receptacle being secured at its open upper end in the mouth 3 of the flask and opening into one end of a vapor-conducting tube 4 secured to the upper end of the flask, and which tube, in practice, would open at its opposite end into a condensing-chamber (not shown), and a steam-coil 5 surrounding the receptacle 2 in the space between the latter and said flask, and extending at its opposite ends 6 and 7 through said flask for connection with a suitable source of steam-supply (not shown) and for exhaust, respectively.

The chloroform to be purified is poured into the receptacle 2 to partially fill the latter, as, for example, up to the level indicated by the line x and a fluid of the character above stated and indicated at 8, then poured into the receptacle 2 onto the top of the chloroform, the said fluid floating on the latter and extending, as for example, to a level indicated by the line y. Any fluid capable of chemically combining with the free chlorin in the chloroform vapor may be used, it being preferred, however, that the fluid be a hyper-saturated solution of a base, alkali, salt, or any other substance capable of chemically combining with the free chlorin in the chloroform vapor, and that where an alkali is used, it be potassium-hydroxid (KOH), and that where a salt is used, it be silver-nitrate ($AGNO_3$). The chloroform is then heated to vaporize it, as by passing steam through the coil 5, to heat the chloroform to as high a degree as possible, but sufficiently low to prevent the vaporizing of said solution and the forcing from the latter of the base, alkali, salt or other substance therein of the character above stated, as the case may be, by the action of the vaporized chloroform which passes in the form of vapor through the solution, the heating of the chloroform to about 200° F. producing satisfactory results. By passing the chloroform, in vaporized condition, through the fluid 8, the free chlorin in the chloroform combines with the base, alkali, salt or other substance therein of the character above stated, as the case may be, and the volatile oils in the chloroform are held back and condensed by said fluid, with the result of removing the free chlorin and volatile oils from the chloroform vapor, which latter passes from the receptacle 2 and tube 4 in the desired purified condition into the condenser. The passing of the chloroform in vaporized condition through the fluid, as above set forth, is of great advantage, as the great molecular expansion of the chloroform, when heated, causes the molecules thereof to be spread apart, thus enhancing the subjection of the chloroform molecules to the fluid 8 and effectually freeing the vapor of its free chlorin and oils. Furthermore, it is preferred that the fluid used for chemically combining with the free chlorin in the chloroform vapor, for the purpose above stated, be uncombined with chlorin, as its capacity for combining with

free chlorin in the chloroform vapor is much greater than if the fluid used be initially combined with chlorin. However, it will be readily understood that, if desired, a fluid may be used within my invention which is initially combined with chlorin, provided it does not contain such an amount of chlorin that it will not take up free chlorin in the chloroform when the latter in vaporized condition is passed through said fluid.

What I claim as new and desire to secure by Letters Patent is—

1. The process of purifying chloroform, which consists in passing the chloroform in vaporized condition through a fluid capable of chemically combining with free chlorin in the chloroform vapor.

2. The process of purifying chloroform, which consists in passing the chloroform in vaporized condition through a solution of a substance capable of chemically combining with free chlorin in the chloroform vapor.

3. The process of purifying chloroform, which consists in passing the chloroform in vaporized condition through a solution of an inorganic substance capable of chemically combining with free chlorin in the chloroform vapor.

4. The process of purifying chloroform, which consists in passing the chloroform in vaporized condition through a fluid uncombined with chlorin, but capable of chemically combining with free chlorin in the chloroform vapor.

5. The process of purifying chloroform which consists in passing the chloroform in vaporized condition through a solution of a salt capable of combining with chlorin.

6. The process of purifying chloroform, which consists in passing the chloroform in vaporized condition through a solution of a salt uncombined with chlorin, but capable of combining with chlorin.

7. The process of purifying chloroform, which consists in passing the chloroform in vaporized condition through a solution of silver nitrate.

VICTOR C. BEST.

In the presence of—
NELLIE B. DEARBORN,
OTTILIE C. AVISUS.